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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/176,778	07/06/2011	Mark Alan Trautman	GCSD-2376 (61763)	5178
74701	7590	04/19/2017	EXAMINER	
ADD&G - Harris			SKAIST, AVI T.	
255 S ORANGE AVENUE				
SUITE 1401				
ORLANDO, FL 32801				
			ART UNIT	PAPER NUMBER
			3674	
			NOTIFICATION DATE	DELIVERY MODE
			04/19/2017	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MARK ALAN TRAUTMAN and
DANIEL SULTENFUSS

Appeal 2015-005229¹
Application 13/176,778²
Technology Center 3600

Before NINA L. MEDLOCK, PHILIP J. HOFFMANN, and
CYNTHIA L. MURPHY, *Administrative Patent Judges*.

HOFFMANN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the final rejection of claims 1, 3, 6–10, 12, 13, 15–18, 20, and 21. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ Our decision references Appellants’ Specification (“Spec.,” filed July 6, 2011), Appeal Brief (“Appeal Br.,” filed Jan. 14, 2015), and Reply Brief (“Reply Br.,” filed Apr. 14, 2015), as well as the Final Office Action (“Final Action,” mailed Oct. 28, 2014) and the Examiner’s Answer (“Answer,” mailed Mar. 26, 2015).

² According to Appellants, “[t]he real parties in interest are Harris Corporation and ConocoPhillips Company.” Appeal Br. 1.

According to Appellants, the invention relates “to hydrocarbon resource recovery using RF heating.” Spec. ¶ 1. Claims 1, 10, and 17 are the only independent claims. Appeal Br., Claims App. We reproduce claim 1, below, as illustrative of the claims.

1. A method for hydrocarbon resource recovery in a subterranean formation comprising:

forming a plurality of spaced apart injector/producer well pairs in the subterranean formation, each injector/producer well pair comprising a laterally extending producer well and a laterally extending injector well spaced thereabove;

forming a plurality of laterally extending infill wells in the subterranean formation, each infill well being located between respective adjacent injector/producer well pairs;

positioning at least one respective RF antenna within each of the infill wells;

recovering hydrocarbon resources from the producer wells based upon Steam Assisted Gravity Drainage (SAGD) via the injector/producer well pairs to create a respective steam chamber associated with each injector/producer well pair; and

recovering hydrocarbon resources from the infill wells based upon supplying radio frequency (RF) energy to the RF antennas to heat regions of the subterranean formation surrounding the respective infill wells to create hydraulic communication between each pair of adjacent steam chambers and an associated infill well therebetween.

Id.

REJECTION AND PRIOR ART

The Examiner rejects claims 1, 3, 6–10, 12, 13, 15–18, 20, and 21 under 35 U.S.C. § 103(a) as unpatentable over Arthur (US 7,556,099 B2, iss. July 7, 2009) and Supernaw (US 5,109,927, iss. May 5, 1992).

ANALYSIS

We have fully considered Appellants' arguments. Appeal Br. 6–14; *see also* Reply Br. 2–3. Based on our review of the record, we do not find error in the Examiner's obviousness rejection. Thus, we sustain the rejection of all of the claims.

Appellants argue the rejected claims—claims 1, 3, 6–10, 12, 13, 15–18, 20, and 21—as a group. Appeal Br. 6–14. We choose independent claim 1 as representative, and the remaining claims stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv). With respect to the rejection of independent claim 1, the Examiner finds that Arthur discloses virtually all of the limitations of the claim, except for the use of an RF antenna, which, the Examiner finds, is taught by Supernaw. Final Action 4–6. As discussed in further detail below, we agree with the Examiner that “replacing the mobilizing fluid disclosed by Arthur with the RF heating [by an RF antenna] as taught by Supernaw is but a simple substitution of one known equivalent source for establishing fluid communication between wells for another.” *Id.* at 5.

MPEP § 2143 provides guidance regarding the findings that an Examiner must make to support an obviousness rejection in which an element from one prior art reference is characterized as a simple substitution for an element in another prior art reference. In particular, this section of the MPEP provides, in relevant part, as follows:

To reject a claim based on this rationale, Office personnel must resolve the Graham factual inquiries. Then, Office personnel must articulate the following:

- (1) a finding that the prior art contained a device (method, product, etc.) which differed from the claimed

device by the substitution of some components (step, element, etc.) with other components;

(2) a finding that the substituted components and their functions were known in the art;

(3) a finding that one of ordinary skill in the art could have substituted one known element for another, and the results of the substitution would have been predictable; and

(4) whatever additional findings based on the Graham factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

The rationale to support a conclusion that the claim would have been obvious is that the substitution of one known element for another yields predictable results to one of ordinary skill in the art. If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.

MPEP § 2143(I)(B). In this case, the Examiner's findings are in accordance with the above points (1)–(4). Conversely, we are not persuaded of error by any of Appellants' arguments in the Appeal Brief or the Reply Brief.

More specifically, we agree that the proposed modification is an obvious substitution because “Arthur discloses . . . creat[ing] a respective steam chamber associated with each injector/producer well pair” (Final Action 4), as well as “recovering hydrocarbon resources from the infill wells” that are between the injector/producer well pairs (*id.* at 5), although such recovery occurs after injecting a “mobilizing fluid” through the infill wells (*id.*). We also agree that while “Supernaw teaches using RF heating [with an RF antenna] in combination with steam flooding (col. 1[,], lines 33[–]42)” to recover hydrocarbon resources (*id.*), and the cited portion of Supernaw teaches that “[t]he RF energy can be radiated with the

formation from . . . a production well” (Supernaw col. 1, ll. 37–40).

Restated, the proposed modification simply amounts to the substitution of Supernaw’s RF antenna, which Supernaw teaches is used in a well that recovers hydrocarbon resources (i.e., a production well), for Arthur’s mobilizing fluid that is used in a well that recovers hydrocarbon resources (i.e., an infill well), each of the RF antenna and the mobilizing fluid being used for the same purpose of facilitating recovery of hydrocarbon resources through the wells in which the RF antennas are installed or through which the mobilizing fluid is injected.

Further, we agree with the Examiner that using Supernaw’s RF antenna in place of Arthur’s mobilizing fluid would have provided a predictable result, because both Supernaw’s RF antenna and Arthur’s mobilizing fluid are used to recover hydrocarbon resources from between other hydrocarbon recovery wells. Final Action 5–6, 12; *see also* Answer 3. This rationale is adequate to support the Examiner’s conclusion of obviousness, and we note that the Examiner is not required, for example, to show that any reference provides an express teaching, suggestion, or motivation for the substitution. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007) (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”); *see also* MPEP § 2143(I)(B) (“The rationale to support a conclusion that the claim would have been obvious is that the substitution of one known element for another yields predictable results to one of ordinary skill in the art.”).

Thus, for the reasons detailed above, we conclude that the Examiner establishes that it would have been obvious to combine Arthur and

Supernaw to provide the claimed invention. As we state above, we are not persuaded of error by any of Appellants' arguments in the Appeal Brief or the Reply Brief. We highlight and discuss certain of Appellants' arguments below for emphasis only.

Appellants argue

that the Examiner mischaracterized Supernaw . . . as it fails to disclose positioning at least one respective RF antenna within each of the infill wells and recovering hydrocarbon resources from the infill wells based upon supplying RF energy to the RF antenna, which is positioned in the infill well. Instead, Supernaw . . . merely discloses positioning an antenna in a selected producer or injector well in a SAGD configuration.

Appeal Br. 7. Appellants do not provide a citation as to where the argued mischaracterization by the Examiner occurs. However, we note that the Examiner states that "Supernaw, *as applied to Arthur*, teaches positioning at least one respective RF antenna within each of the infill wells," which we understand to mean that the Examiner's proposed combination of references (rather than the disclosure of Supernaw itself) results in an RF antenna within each infill well. Final Action 6 (emphasis added). Regardless, we do agree with Appellants that Supernaw describes the use of an RF antenna in a production (or injection) well and not in an infill well as claimed. Appeal Br. 7–8, (citing Supernaw col. 1, ll. 64–67). However, because the Examiner's rejection relies on a substitution of Supernaw's RF antenna from one type of well that recovers hydrocarbon resources (i.e., a production well), into another type of well in Arthur which also recovers hydrocarbon resources (i.e., an infill well), we also agree with the Examiner's conclusion that it would have been obvious to substitute Supernaw's RF antenna for

Arthur's mobilizing fluid in each of Arthur's infill wells, for the reasons set forth above. Final Action 4–6.

Appellants further argue “that the Examiner’s combination of references is improper. More particularly, as supported by the Rule 132 Declaration, a person having ordinary skill in the art would not turn to Supernaw . . . to combine with Arthur . . . in an attempt to arrive at the claimed invention.” Appeal Br. 8; *see also id.* at 8–13. We disagree with Appellants. As stated above, the Examiner finds that Arthur discloses substantially all of the features recited in claim 1. Final Action 4–5. The Examiner also determines that it would have been obvious to substitute Supernaw’s RF antenna for Arthur’s mobilizing fluid in each of Arthur’s infill wells. Final Action 5, 6. As discussed above, we agree with the Examiner, and neither Appellants’ arguments nor the Declaration (addressed in further detail below) persuades us otherwise.

For example, although it is true that “Supernaw . . . discloses applying RF to injector or producer wells to selectively heat the formation to more effectively sweep the reservoir. . . . Arthur . . . fails to disclose any type of RF heating, and expressly discloses injecting a mobilization fluid in an infill well” (Appeal Br. 8), this fails to persuade us that it would not have been obvious to use Supernaw’s RF antenna in each of Arthur’s infill wells. As discussed above, we agree with the Examiner that Supernaw’s RF antenna may be substituted for Arthur’s mobilizing fluid, and that the use of Supernaw’s RF antenna in place of Arthur’s mobilization fluid would yield predictable results. Also, we are unpersuaded by Appellants’ argument that Arthur’s silence regarding RF heating indicates that Arthur considered and

rejected the use of RF heating, such that Arthur teaches away from using RF heating. Appeal Br. 8–9.

Further, the Declaration by Mark Alan Trautman fails to persuade us that the Examiner errs in determining that claim 1 is obvious. Appeal Br. 8–13; *see also* DECLARATION OF MARK ALAN TRAUTMAN, dated Oct. 9, 2014. In the Declaration, Appellants compare the claimed method to a “conventional” method of recovering hydrocarbon resources with steam assisted gravity drain (“SAGD”), for example, in an attempt to establish that the results provided by the claimed method are “unpredictable” (i.e., unexpected). *See* Decl. ¶¶ 16–22. However, a persuasive showing of unexpected results would require a comparison of Appellants’ method to the closest prior art, whether that is Arthur’s method or some other known method. *See In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991) (“The burden of showing unexpected results rests on the person who asserts them by establishing that the difference between the claimed invention and the closest prior art was an unexpected difference.”).

Notably, Arthur discloses “[m]athematical model results” demonstrating that its method has “significant advantage over the comparable process involving no infill wells.” Arthur, col. 7, ll. 32–34. Specifically, for example, Arthur discloses that when its method is utilized, “recovery efficiency increases to 58% at a comparable or slightly reduced cumulative steam oil ratio of 1.5.” Arthur, col. 7, ll. 41–43. Thus, Arthur itself appears to describe its method as an improvement to and more effective than conventional methods that omit infill wells. Conversely, Appellants’ Specification (*see, e.g.*, Spec. 14–16) and Declaration (*see, e.g.*, Decl. ¶¶ 16–22), as well as Appellants’ arguments in the Appeal Brief (*see*

Appeal Br. 12–14) and Reply Brief (Reply Br. 2–3), refer generally to “conventional SAGD” and “prior art recovery techniques,” and there is no indication that such conventional and prior art techniques used for comparison include infill wells. Thus, Appellants do not establish that any results in the Declaration are unexpected vis-à-vis the closest prior art.

Finally, we do not agree with Appellants that “a person skilled in the art would be [led] to recognize that RF as in Supernaw . . . was considered and dismissed by Arthur Such evidence is supported by the Rule 132 Declaration.” Appeal Br. 9. Rather, we determine that the Declaration does not discuss anything related to Arthur’s dismissal of the use of an RF antenna.

Thus, based on the foregoing, we are not persuaded by Appellants’ arguments of any error in the Examiner’s rejection of the claims. Inasmuch as Appellants argue all of the claims together, we sustain the obviousness rejection of claims 1, 3, 6–10, 12, 13, 15–18, 20, and 21.

DECISION

We AFFIRM the Examiner’s obviousness rejection of claims 1, 3, 6–10, 12, 13, 15–18, 20, and 21.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED